CHAPTER 5

Prioritizing Pollutants, Sources and Causes

Objectives

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- Prioritize pollutants for your watershed based on the designated uses

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- Prioritize pollutants for your watershed based on the designated uses
- Prioritize sources and causes of the pollutants

Example Watershed
Prioritization Process
for Designated Uses & Pollutants

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Prioritization Process for Designated Uses & Pollutants

Designated Uses	Pollutants	Priority
• Warmwater fishery	Sediment	1
	Nutrients	2
	Hydrologic flow	3

Example Watershed
Prioritization Process for Designated Uses & Pollutants

Designated Uses	Pollutants	Priority
• Warmwater fishery	Sediment	1
	Nutrients	2
	Hydrologic flow	3
• Other indigenous aquatic life/wildlife	Sediment	1
	Hydrologic flow	2
	Nutrients	3
	Oils, grease & metals	4

Example Watershed
Prioritization Process for Designated Uses & Pollutants

Designated Uses	Pollutants	Priority
• Warmwater fishery	Sediment	1
	Nutrients	2
	Hydrologic flow	3
• Other indigenous aquatic life/wildlife	Sediment	1
	Hydrologic flow	2
	Nutrients	3
	Oils, grease & metals	4
• Partial body contact recreation	*E. coli* bacteria	1
	Nutrients	2

Example Watershed Prioritization Process for Designated Uses & Pollutants

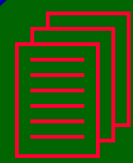
Designated Uses	Pollutants	Priority
• Warmwater fishery	Sediment	1
	Nutrients	2
	Hydrologic flow	3
• Other indigenous aquatic life/wildlife	Sediment	1
	Hydrologic flow	2
	Nutrients	3
	Oils, grease and metals	4
• Partial body contact recreation	*E. coli* bacteria	1
	Nutrients	2
• Public Water Supply (threatened)	Nutrients (Nitrate)	1

Example Watershed Prioritization of Pollutants

Pollutants	Priority Ranking
Sediment	1
Nutrients	2
Hydrologic flow	3
E. coli bacteria	4
Oil, grease, metals	5

Prioritize sources and causes of the pollutants

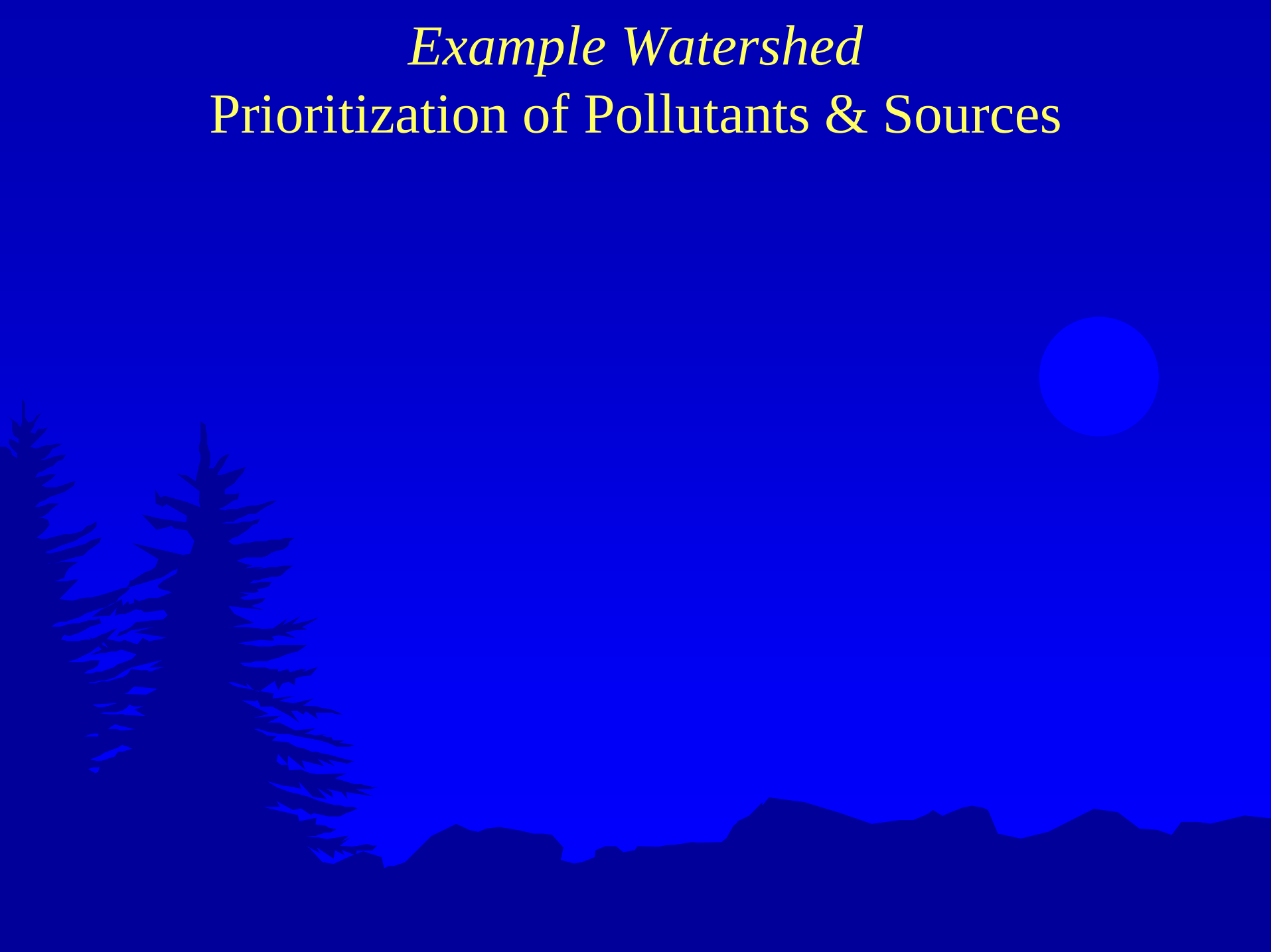
- Consider magnitude of the source
- Consider how readily the pollutant moves



TIP

Criteria commonly used for ranking sources include frequency, degree of degradation, and costs/benefits for addressing

Example Watershed
Prioritization of Pollutants & Sources



Example Watershed
Prioritization of Pollutants & Sources

Pollutants	Ranking	Sources	Ranking
Sediment	1	Eroding road-stream crossings	1
		Stream bank erosion	2
		Livestock in stream	3

Example Watershed
Prioritization of Pollutants & Sources

Pollutants	Ranking	Sources	Ranking
Sediment	1	Eroding road-stream crossings	1
		Stream bank erosion	2
		Livestock in stream	3
Nutrients	2	Livestock in stream	1
		Fertilizer runoff	2
		Failing septic systems	3

Example Watershed
Prioritization of Pollutants & Sources

Pollutants	Ranking	Sources	Ranking
Sediment	1	Eroding road-stream crossings	1
		Stream bank erosion	2
		Livestock in stream	3
Nutrients	2	Livestock in stream	1
		Fertilizer runoff	2
		Failing septic systems	3
Hydrologic flow	3	Urban storm water	1

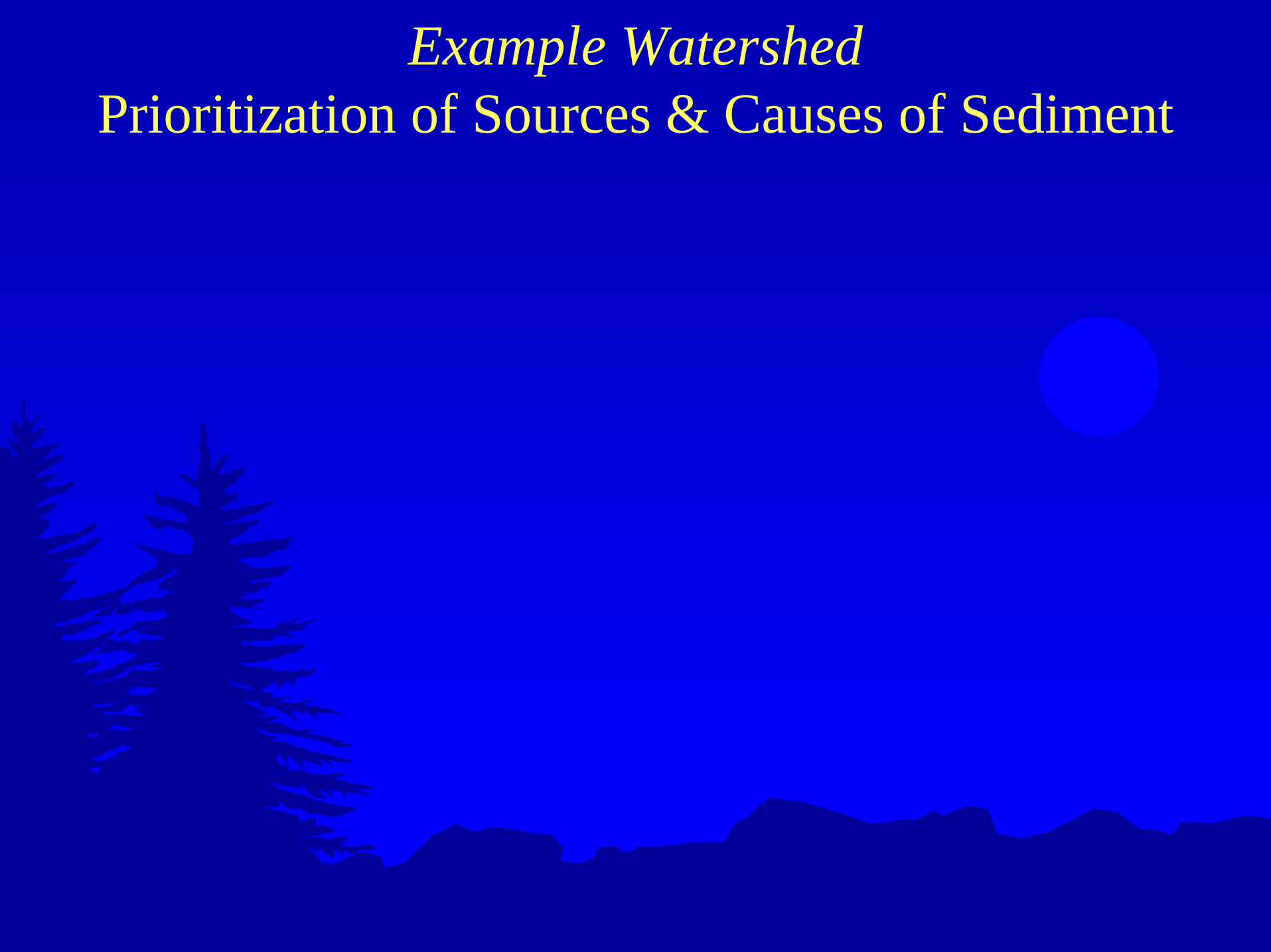
Example Watershed
Prioritization of Pollutants & Sources

Pollutants	Ranking	Sources	Ranking
Sediment	1	Eroding road-stream crossings	1
		Stream bank erosion	2
		Livestock in stream	3
Nutrients	2	Livestock in stream	1
		Fertilizer runoff	2
		Failing septic systems	3
Hydrologic flow	3	Urban storm water	1
E. coli bacteria	4	Livestock in stream	1
		Failing septic systems	2

Example Watershed
Prioritization of Pollutants & Sources

Pollutants	Ranking	Sources	Ranking
Sediment	1	Eroding road-stream crossings	1
		Stream bank erosion	2
		Livestock in stream	3
Nutrients	2	Livestock in stream	1
		Fertilizer runoff	2
		Failing septic systems	3
Hydrologic flow	3	Urban storm water	1
E. coli bacteria	4	Livestock in stream	1
		Failing septic systems	2
Oils, grease and metals	5	Storm drains	1
		Parking lots	2

Example Watershed
Prioritization of Sources & Causes of Sediment



Example Watershed
Prioritization of Sources & Causes of Sediment

Source	Ranking	Causes	Ranking
Eroding road-stream crossings	1	Undersized culverts	1

Example Watershed
Prioritization of Sources & Causes of Sediment

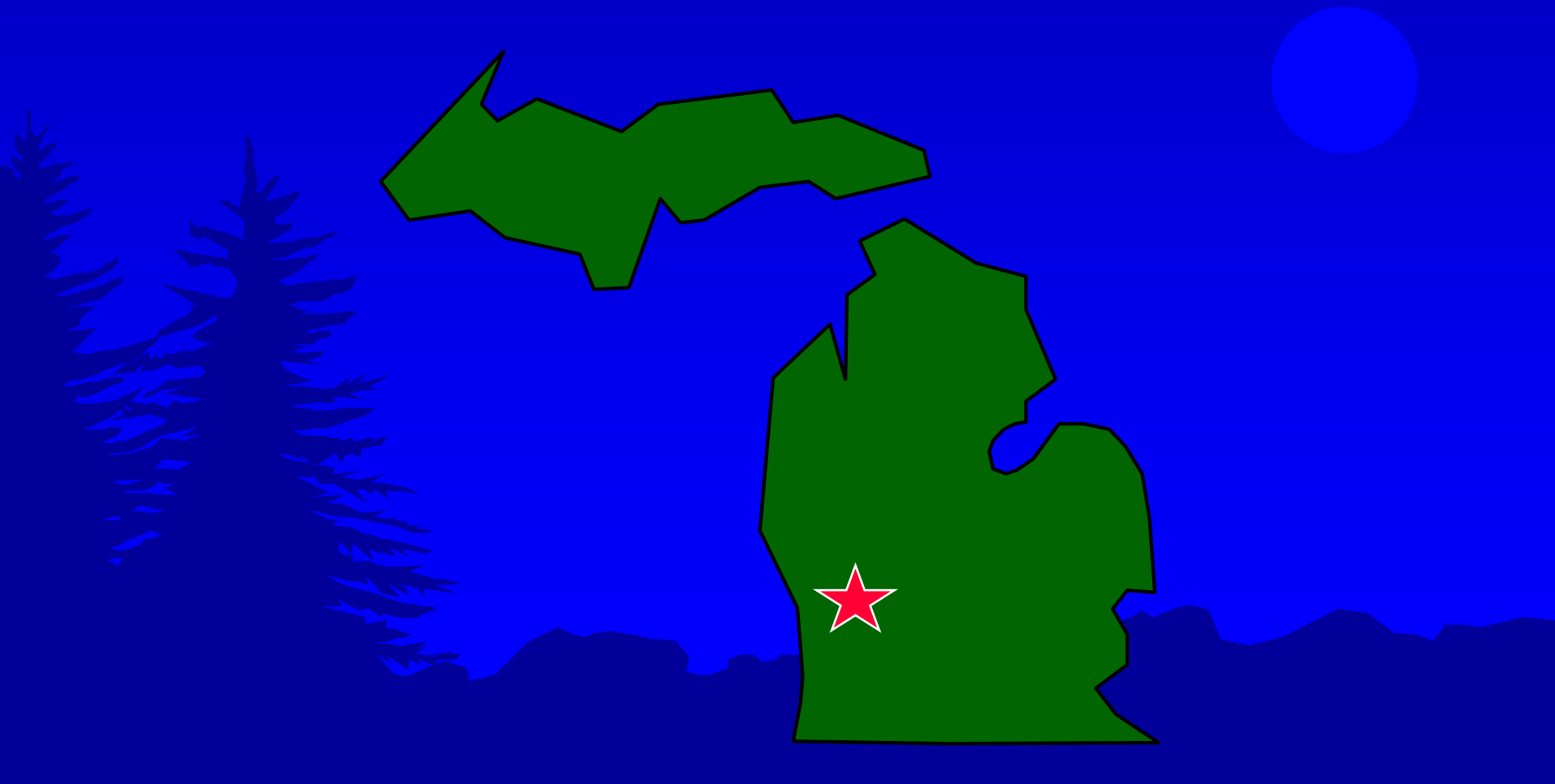
Source	Ranking	Causes	Ranking
Eroding road-stream crossings	1	Undersized culverts	1
Stream bank erosion	2	Flow fluctuation (poor storm water management practices)	1
		Human access	2

Example Watershed
Prioritization of Sources & Causes of Sediment

Source	Ranking	Causes	Ranking
Eroding road-stream crossings	1	Undersized culverts	1
Stream bank erosion	2	Flow fluctuation (poor storm water management practices)	1
		Human access	2
Livestock in stream	3	Unlimited access	1

Continue to prioritize all sources & causes

Case study:
Bear Creek Watershed Project
Kent County



Bear Creek Watershed
Kent County

- Designated Use - Coldwater fishery & partial/total body contact recreation

Bear Creek Watershed
Kent County

- Designated Use - Coldwater fishery & partial/total body contact recreation
- major pollutants - sediment & *E. coli* bacteria

Bear Creek Watershed
Kent County

- Designated Use - Coldwater fishery & partial/total body contact recreation
- major pollutants - sediment & E. coli bacteria
- group sources by category (agricultural or non-agricultural) and evaluate based on criteria

Criteria

- Degree of the impact of that site to the stream (0-50 points)
- Landowner willingness to cooperate (0-40 points)
- Demonstration ability (0-25 points)
- TOTAL POINTS POSSIBLE = 115

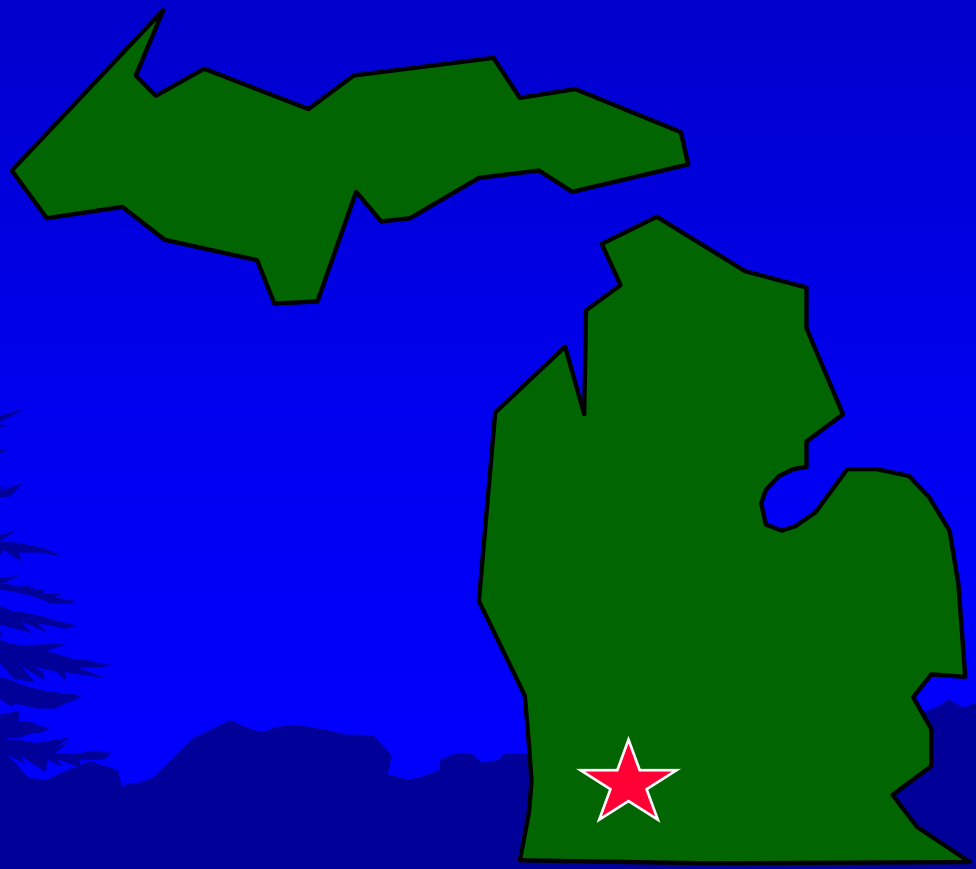
Bear Creek Watershed
Kent County

- Designated Use - Coldwater fishery & partial/total body contact
- major pollutants - sediment & E. coli bacteria
- group sources by category (road crossing, or agricultural) and evaluate based on criteria
- compare each site with all other sites

Bear Creek site prioritization

Site #	Total score
Ag site #13	110
Non-ag site #2	96
Non-ag site #7	92
Non-ag site #5	92
Ag site #2	91
Ag site #7	91
Ag site #11	90

Case study:
Davis Creek Watershed
Kalamazoo County



Davis Creek Watershed

- used intensive water sampling and analysis study
- observations by “creek walkers”

The Best Method for Prioritizing uses, pollutants, sources and causes ….

The Best Method
for Prioritizing uses, pollutants, sources and causes ….
depends on the characteristics of your watershed

Product

- A prioritized list of:
  - Designated & Desired Uses
  - Pollutants
  - Sources
  - Causes
- A description of the methods used to prioritize these

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CHAPTER 6

Determining Objectives for Your Watershed Goals

At this point you understand:

- Physical characteristics of your watershed
- Pollutants that are impairing & threatening designated uses
- Sources & causes of pollutants
- Desired uses of your watershed

Develop objectives for each of your watershed goals

- Review initial goals & determine how you will reduce pollution from a source to protect or restore a designated/desired use

Example Watershed
Objectives for One Goal

Goal	Objectives
Restore the warmwater fishery	Reduce the amount of sediment
	Reduce the amount of nutrients

Example Watershed
Objectives for One Goal

Goal

Restore the warmwater fishery

Objectives

Reduce the amount of sediment by:

- Stabilizing eroding road-stream crossings
- Stabilizing eroding stream banks
- Restricting livestock from the stream

Reduce the amount of nutrients by:

Example Watershed
Objectives for One Goal

Goal

Restore the warmwater fishery

Objectives

Reduce the amount of sediment by:

- Stabilizing eroding road-stream crossings
- Stabilizing eroding stream banks
- Restricting livestock from the stream

Reduce the amount of nutrients by:

- Restricting livestock from the stream
- Reducing fertilizer runoff from residential lawns

Product

- Updated water quality summary stating the objectives for each of your watershed goals (designated & desired uses)

"The first project goal is to restore partial body contact recreation use by: *(1) excluding livestock from uncontrolled access and (2) reducing the amount of fertilizer runoff from residential lawns.*"

Now what?

Decide how to achieve your objectives:

- Implement best management practices
- Modify existing projects, programs & ordinances
- Implement education and information activities
- EVALUATE